Management of Thyroid Gland Hemorrhage After Blunt Trauma: A Case Report and Review of the Literature

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Abstract
Background: Thyroid hemorrhage is a rare injury in patients suffering from blunt trauma to the neck. The case of a 60-year-old woman is described who developed increasing swelling in the neck with a mild inspiratory stridor after a fall from her bed. The fall had resulted in hemorrhage within a previously existing goiter. Further analysis by means of a CT scan revealed severe tracheal compression and active bleeding, which prompted immediate operative intervention. The patient recovered without complications. The decision-making process in this case is outlined, and other reports describing patients with thyroid hemorrhage after blunt cervical trauma are reviewed.

Conclusion: Although blunt thyroid injury is an uncommon condition, failure to consider the diagnosis or failure to anticipate complications of thyroid hemorrhage may result in progressive bleeding and airway compromise. Decision making is based on the patient’s vital signs and, if possible, the findings on a contrast-enhanced CT scan of the neck.

Key Words
- Blunt trauma
- Thyroid
- Hemorrhage
- Airway management
- Neck injury

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Introduction
Blunt trauma to the neck can result in bony, muscular, nervous, vascular and aerodigestive tract injury. Traumatic hemorrhage of the thyroid gland is rare. However, recognition of this condition is important because it may cause acute airway compromise by (partial) obstruction, requiring prompt airway intervention. Injury due to a direct blunt force [1–5], like collisions with a steering wheel, bicycle handles, a staircase and barbed wire have been described. Indirect trauma [6–11] caused by hyperflexion of the neck has also been reported.

We report a case of blunt trauma after a fall from the bed, resulting in impending airway obstruction by thyroid gland hemorrhage. A review of the literature is given and the clinical management is discussed.

Case Report
A 60-year-old woman sustained blunt neck injury by falling out of her bed. She landed with her face and neck on the nightstand. The patient was referred to the hospital by her general practitioner because of increasing swelling in the neck and an inspiratory stridor. On presentation at the emergency department, the patient complained of having a difficulty swallowing and dyspnoea with minor exercise. She was known to have a small goiter for several years, but she did not use any medication. When at rest, the patient appeared comfortable and there were no obvious signs of respiratory distress. A mild inspiratory stridor was noted on deep inhalation. Her vital signs were normal, showing a blood pressure of 110/80 mmHg, a heart rate of 76 bpm and an O2 saturation of 100%. Head and neck examination revealed an obvious swelling of the anterior neck, greatest on the left side (Figure 1). The neck
mass was firm, nonfluctuant, nonpulsating, and tender on palpation. Carotid pulses were normal, and there was no jugular venous congestion. Auscultation of the lung fields revealed good air movement bilaterally. Further examination showed a small hematoma on the left jaw, slightly tender on palpation. Hemoglobin was 8.2 g/dl (normal range 7.5–10) with a hematocrit of 0.39 (normal range 0.36–0.47), the platelet count was $314 \times 10^9/l$ (normal range 150–400), and INR was 1.0. Thyroid profile results were TSH 0.795 mU/l (normal range 0.5–3.9) and FTI 14.6 pmol/l (normal range 9–24). Because the patient showed no respiratory distress and had normal hemodynamics, further evaluation by means of a computed tomography (CT) was done.

A multidetector CT (MDCT) of the neck, after injection of 70 ml iodinated contrast material (Xenetix 350, Guerbet) and 40 ml saline, showed a large hematoma in the left thyroid lobe, measuring $6.4 \times 6.9 \times 8$ cm (Figure 2). The hematoma extended into the anterior mediastinum. Tracheal deviation to the right with luminal narrowing with a smallest diameter of 7 mm was noted. A small area of contrast extravasation within the hematoma indicated active bleeding (Figure 3). The case was discussed with the on-call anesthesiologist in anticipation of difficult airway management. The patient was brought to the operating room. After rapid sequence induction and during intubation, a surgeon was placed on standby to perform a surgical airway if necessary. By means of an extra long tube (OD 5 mm), it was possible to pass the area of compression located just below the level of the vocal cords. Neck exploration was performed through